

Recent Books

Evolutionary Studies of Cockroaches. F. A. McKittrick, Cornell University, Agricultural Experiment Station, New York State College of Agriculture, Ithaca, New York. Memoir 389, October 1964, 133 pp. text, 64 plates.

This memoir presents a detailed study of the cockroaches for the purpose of reaching an understanding of the phyletic relationships of the recent cockroaches and their natural classification. To this end, the author investigated four "character systems": the female genitalia with its musculature, the male genitalia, the proventriculi, and the ovipositional behavior.

The genitalia preparations are described in detail. The proventriculus was chosen for study because, in the words of the author, "it shows structural diversity and had not been studied comparatively in any detail." The proventriculi were studied by clearing, staining, and mounting on slides. The oviposition behavioral studies were obtained by placing the cockroaches in either glass cages or in plastic boxes, with the insects placed on clean, white sand.

The results of his studies on each of the character systems are present in detail. With respect to the proventriculus, Dr. McKittrick included observation on the Isoptera which proved to be most interesting. However, the chief merit of study of the proventriculus appears to reside in the fact that it may serve to distinguish sharply between two genera whose external anatomy suggests that they are closely related. *Cryptocercus* and *Panesthea* present one such case.

The work includes keys to the subfamilies based on female genitalia, male genitalia, and the proventriculi, and presents phylogenetic trees illustrating the systematic relationships of the various taxa. In addition there are more than 200 illustrations and photographs.

Dr. McKittrick's memoir is a very substantial contribution to the systematics of a very important group of insects, and will undoubtedly serve as a standard reference for many years to come.

J. B. SCHMITT
